

Attunity Connect Installation Guide

OS/390 and z/OS

Version 4.1



Attunity Connect Installation Guide for OS/390 and z/OS

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Table of Contents

| | |
|---|-----------|
| Chapter 1: Pre-Installation and Upgrade Installation Instructions | 5 |
| Requirements | 5 |
| Pre-Installation | 6 |
| Upgrade Installation..... | 7 |
| Chapter 2: Installation Instructions | 9 |
| Preparing the Installation..... | 9 |
| Running the Installation | 11 |
| Troubleshooting the Installation..... | 15 |
| Chapter 3: Post Installation Instructions | 17 |
| General Post Installation Procedures | 17 |
| Setting Up Attunity Connect to Work With CICS | 20 |
| Setting Up Attunity Connect to Work With IMS/TM | 21 |
| Setting Up Attunity Connect for Reentrancy | 22 |
| Setting Up Attunity Connect to Access DB2 CLI..... | 23 |
| Setting Up Attunity Connect to be Able to Update VSAM Data..... | 24 |
| Setting Up Attunity Connect to Access IMS/DB | 24 |
| Setting Up IMS/DB Under CICS | 25 |
| Setting Up IMS/DB Under IMS/TM | 25 |
| Installing the Attunity Connect Natural/CICS Agent | 26 |
| Setting the Language..... | 31 |
| Upgrading Attunity Connect..... | 33 |
| Appendix A: System Parameters for the Attunity Connect Natural Agent | 35 |
| Checklists | 43 |
| Pre-Installation Information | 43 |
| Required Permissions | 45 |
| Installation Checklist | 45 |
| Post-Installation..... | 46 |

Chapter 1 Pre-Installation and Upgrade Installation Instructions

A set of checklists are provided at the end of this manual, starting on page 43. These checklists can be used to record pre-installation, installation and post-installation information as well as required permissions. It is recommended to cut these out and use them during the installation procedure.

Attunity Connect supports the following:

- ADABAS version 6.2.1 and higher
- CICS V4R1 and higher¹
- DB2 version 5 and higher
- Flat files
- IMS/DB version 6 and higher
- IMS/TM version 6.1 and higher
- Natural
- Text-delimited files
- VSAM
- XML

Requirements

The following are the hardware and software you need in order to run Attunity Connect on the IBM mainframe:

Machine – IBM S/390

Operating System – IBM OS/390 V2R5 and up (including z/OS).

If you intend using Attunity Connect with CICS, EXCI support must be installed. IRCSTRT=YES must be specified in the CICS initialization parameters, so that the IRC (Inter Region Communication) starts. You

¹. Any version of CICS that supports the External CICS Interface (EXCI).

can also set the IRC to open by issuing the following command: `CEMT SET IRC OPEN`. Also the IBM group `DFH$EXCI` (or an equivalent user-defined group) must be installed in the CICS region – using the CEDA RDO facility.

If you intend using Attunity Connect with IMS/TM, OTMA C/I must be installed. The startup parameter in the IMS procedure must be set to `OTMA=YES` during IMS system definition. OTMA-related parameters such as `GRNAME=` for the XCF group name and `OTMANM=` for the IMS member name in that XCF group, must also be set.

Disk Space (3380 and 3390 disks) – 150 cylinders

Memory – The minimum requirement is 1MB per connection. A connection is defined as a connection between to a server process or daemon. The actual memory requirement depends on such things as the size of the database and the number of databases accessed.

Communication – TCP/IP support, as supplied by IBM, Computer Associates International, Inc., etc.

Pre-Installation

Before starting the installation, make sure that you have the following information available, which is prompted for during the installation:

- The output class for the installation output if you don't want to use the default (A).
- To enable access to DB2:
 - The DB2 database high-level qualifier.
 - The DSN name of the DB2 database.
- To enable access to ADABAS:
 - The ADABAS SVC number (the default is 249).
 - The ADABAS database number.
 - The ADABAS load library location (the default is ADA622.LOAD).
- If you use SMS to manage all datasets (you can't provide unit and volume information), the unit where SMS resides.

Before starting the installation, make sure that you have the following permissions:

- Permission to define an APF-authorized library.
- Permission to write to an active proclib (such as `user.proclib`).
- Permission to read the CICS EXCI library.
- Permission to update the security manager (such as RACF).

- ❖ Optionally, make sure that you have permission to specify an output class for Attunity Connect output. Assigning a device which is set on HOLD prevents the loss of log information when the Attunity Connect started tasks finish.

The Attunity Connect software for the IBM mainframe is contained in the following datasets:

- AC4100.TRANSMIT.KIT
- AC4100.TRANSMIT.LOAD

These datasets are provided on a CD-ROM or available from the Attunity FTP site in the zip file `ac4100-mvs.zip`.

► **To set up installation of Attunity Connect on the mainframe:**

1. Load to a PC the `ac4100-mvs.zip` file.
2. Unzip to a PC the `AC4100.TRANSMIT.KIT` and `AC4100.TRANSMIT.LOAD` datasets.
3. On the mainframe, run the following command:

```
tso profile noprefix
```

The user name will not be used as part of the dataset name. On some systems this might be the default.

4. On the mainframe, allocate datasets with the following space for each of these files:

`AC4100.TRANSMIT.KIT` = 130 tracks (3380 and 3390 disks)

`AC4100.TRANSMIT.LOAD` = 420 tracks (3380 and 3390 disks)

For each dataset: `RECFM` = FB and `LRECL` = 80.

5. Using FTP, copy `AC4100.TRANSMIT.KIT` and `AC4100.TRANSMIT.LOAD` in **binary mode** to the mainframe. You can replace the AC4100 high-level qualifier to any qualifier you want that does **not** contain a previous installation of Attunity Connect.

Upgrade Installation

You can upgrade a server version of Attunity Connect while keeping the client machines with a previous version.

When upgrading Attunity Connect, before doing the installation, backup Attunity Connect repository entries, as follows:

```
NAVROOT.USERLIB (NAVCMDB)
```

Enter “`EXPORT ALL SYS out`” at the prompt.

Where *NAVROOT* is the high-level qualifier where Attunity Connect is installed and *out* is the name (including path) of a dataset where the SYS definitions will be written in XML format.

- ❖ If you receive an error on running the command, define a large dataset to hold all the output.

Run the following for every data source accessed by Attunity Connect:

```
NAVROOT.USERLIB (NAVCMD)
```

Enter “EXPORT ALL *dsname dsout*” at the prompt.

where *dsname* is a data source name, as defined in the binding configuration and *dsout* is the name (including path) of a dataset where the data source definitions are written in XML format.

Chapter 2 Installation Instructions

Preparing the Installation

Complete the following steps to install Attunity Connect:

1. From within TSO, run the following command at the TSO prompt:

```
RECEIVE INDSNAME ('nnn.TRANSMIT.KIT')
```

where *nnn* represents the high-level qualifier you want to assign for the Attunity Connect installation. Assign the high-level qualifier you specified in step 5 of the pre-installation. The default value is AC4100.

- ❖ You can specify multiple prefixes for *nnn*, such as ACME.DEV.AC4100 with the following conditions:

The total length must be less than or equal to twenty characters.

The words "**transmit**" and "**buildkit**" cannot be used for *nnn* or any part of it.

Enter the following when prompted for the restore parameters:

```
da ('nnn.TRANSMIT.LIB') [UNIT(unit) VOLUME(volume)]
```

This extracts the *nnn.TRANSMIT.LIB* library from the *nnn.TRANSMIT.KIT* kit to the specified unit and volume. If a unit and volume are not specified the library is extracted to the current unit and volume.

2. Execute the `PREPARE` member of the *nnn.TRANSMIT.LIB* library:

```
ex PREPARE
```

The following table displays the screens used to prepare the Attunity Connect installation and their expected response.

| Screen | Response |
|--|---|
| DO YOU WANT TO USE SMS MANAGED STORAGE FOR THIS INSTALLATION Y/N [N] : | If you want to manage the storage using SMS, answer Y, otherwise answer N. |

| Screen | Response |
|--|--|
| ENTER THE STORCLASS FOR INSTALLATION TEMP DATASETS [] : | This prompt is displayed only if SMS is used to manage the installation (you answered Y to the first prompt). Enter the storage class |
| ENTER THE UNIT NAME FOR INSTALLATION TEMP DATASETS [3390] : | If a storage class is not specified, enter the unit name for temporary datasets used during the installation procedure |
| ENTER THE VOLUME NAME FOR INSTALLATION TEMP DATASETS : | This prompt is displayed only if SMS is not used to manage the installation (you answered N to the first prompt). The volume name for temporary datasets used during the installation procedure |
| ENTER THE OUTPUT CLASS FOR INSTALLATION OUTPUT [A] : | Enter the output class only if you do not want the default class used (the default is A) |
| DO YOU WANT TO USE THE DEFAULT JOB CARD Y/N [Y] | A job card is displayed. If you want to use a replacement card, it must be entered as it will appear in the job. You can enter up to six lines. Enter a blank line to end input. If you do not enter a card, the Attunity Connect default card is used. |
| DO YOU WANT TO PERFORM A MANUAL (M) OR AUTOMATIC (A) INSTALLATION [A] : | If you want to review the JCL used to install Attunity Connect, before it is submitted, respond M for a manual installation. |
| PLEASE REVIEW AND SUBMIT FOR EXECUTION THE HLQ.TRANSMIT.LIB(INSTJO) | This prompt is displayed only if a manual installation is requested (you answered M to the previous prompt). |

The following libraries are generated:

nnn.BUILDKIT.LOAD

nnn.BUILDKIT.SRC

nnn.BUILDKIT.GENDEMO

Where *nnn* is the high-level qualifier you assigned in step 1.

Running the Installation

1. In the `nnn.BUILDKIT.SRC` library, execute the `NAVINST` member:

```
ex NAVINST
```

The following table displays the screens used for the Attunity Connect installation and their expected response.

| Screen | Response |
|---|--|
| DO YOU WANT TO USE SMS MANAGED STORAGE FOR THIS INSTALLATION Y/N [N] : | If you want to manage the storage using SMS, answer Y, otherwise answer N. |
| THE SOFTWARE WILL BE INSTALLED UNDER THE HIGH LEVEL QUALIFIER THAT YOU WILL CHOOSE. ENTER THE HIGH LEVEL QUALIFIER ["QUALIFIER"] : | The high-level qualifier for the installation (referred to as <code>NAVROOT</code> throughout this guide) You can use a format such as <code>ACME.DEV.VA10</code> . The total length must be less than or equal to twenty characters. The qualifiers can be the same as the ones used for the installation (step 1). The words "transmit" and "buildkit" cannot be used. |
| ENTER THE STORCLASS FOR TEMP DATASETS ['STORCLASS'] : | This prompt is displayed only if SMS is used to manage the installation (you answered Y to the first prompt). Enter the storage class |
| ENTER THE UNIT NAME FOR INSTALLATION TEMP DATASETS [3390] : | The unit name for temporary datasets used during the installation procedure |
| ENTER THE VOLUME NAME FOR INSTALLATION TEMP DATASETS : | This prompt is displayed only if SMS is not used to manage the installation (you answered N to the first prompt). The volume name for temporary datasets used during the installation procedure |
| PLEASE CONFIRM (YES/NO/QUIT) [YES] : | Confirm the entered details |
| ENTER THE OUTPUT CLASS FOR INSTALLATION OUTPUT [A] : | Enter the output class for Attunity Connect output. Assigning a device which is set on <code>HOLD</code> prevents the loss of log information when Attunity Connect started tasks finish (the default is A). |

| Screen | Response |
|--|--|
| DO YOU WANT TO USE THE DEFAULT JOB CARD Y/N [Y] | A job card is displayed. If you want to use a replacement card, it must be entered as it will appear in the job. You can enter up to six lines. Enter a blank line to end input. If you do not enter a card, the Attunity Connect default card is used. |
| ADDING AND UPDATING ATTUNITY CONNECT CONFIGURATION ON THIS MACHINE FROM A REMOTE ADMINISTRATION CONSOLE CAN ONLY BE DONE BY SOMEONE DEFINED AS AN ADMINISTRATOR FOR ATTUNITY CONNECT ON THIS MACHINE. ENTER A VALID USER NAME FOR AN ATTUNITY CONNECT ADMINISTRATOR [ALL] : | In order to manage Attunity Connect on this machine from Attunity Connect Studio, you need to enter a user account of a user who will have administrative authorization, or press Enter to enable any user to administer Attunity Connect on this machine. The administrative rights can be changed from within Attunity Connect Studio after the installation or on this machine using NAV_UTIL ADD_ADMIN as described in <i>Attunity Connect Reference</i> . |
| DO YOU WANT TO PERFORM A MANUAL (M) OR AUTOMATIC (A) INSTALLATION [A] : | If you want to review the JCL used to install Attunity Connect, before it is submitted, respond M for a manual installation. |
| PLEASE REVIEW AND SUBMIT FOR EXECUTION THE DSN1(INSTJBOR) | This prompt is displayed only if a manual installation is requested (you answered M to the previous prompt). DSN1 is the dataset name where INSTJBOR is located. |

2. In the `nnn.BUILDKIT.SRC` library, execute the CUST member:

ex CUST

Follow the instructions in the Response column in the following table for each entry in the Screen column:

| Screen | Response |
|--|--|
| DO YOU WANT ATTUNITY CONNECT TO WORK WITH DB2 (YES/NO) [YES] : | If you want to access DB2 data, respond YES. |
| ENTER THE DB2 HLQ [DSN610] : | If you responded YES to working with DB2, enter the high-level qualifier for the DB2 database. |

| Screen | Response |
|---|---|
| ENTER THE DB2 DSN NAME : | If you responded YES to working with DB2, enter DSN name for the DB2 database. |
| PLEASE CONFIRM (YES/NO/QUIT) [YES] : | Confirm the entered details. |
| DO YOU WANT ATTUNITY CONNECT TO WORK WITH ADABAS (YES/NO) [YES] : | If you want to access Adabas data, respond YES. |
| ENTER THE ADABAS SVC NUMBER [249] : | If you responded YES to working with Adabas, enter the Adabas SVC number. |
| ENTER THE ADABAS DATABASE NUMBER : | If you responded YES to working with Adabas, enter the Adabas database number. A database number 0 refers to the default Adabas database. |
| ENTER THE ADABAS LOAD LIBRARY NAME [ADA622.LOAD] : | If you responded YES to working with Adabas, enter the Adabas load library. |
| ENTER THE UNIT FOR ADABAS LOAD LIBRARY : | If you responded YES to working with Adabas, enter the unit where the load library resides. |
| PLEASE CONFIRM (YES/NO/QUIT) [YES] : | Confirm the entered details. |
| DO YOU WANT ATTUNITY CONNECT TO WORK WITH IMS/DB (YES/NO) [YES] : | If you want to access IMS/DB data, respond YES. |
| ENTER DBD LIBRARY NAME [IMS.DBDLIB] : | If you responded YES to working with IMS/DB, enter the library where database definition (DBD) datasets are located. |
| ENTER PSB LIBRARY NAME [IMS.PSBLIB] : | If you responded YES to working with IMS/DB, enter the library where Program Specification Blocks (PSBs) are located. |
| ENTER YOUR PSB NAME [HOSPPSB] : | If you responded YES to working with IMS/DB, enter the name of the PSB dataset to use. |
| PLEASE CONFIRM (YES/NO/QUIT) [YES] : | Confirm the entered details. |
| DO YOU WANT ATTUNITY CONNECT TO WORK WITH IMS/DB UNDER CICS (YES/NO) [NO] : | If you want to access IMS/DB data under CICS, respond YES. |

| Screen | Response |
|--|--|
| ENTER THE CICS EXCI LOAD LIBRARY NAME [CICSTS13.CICS.SDFHEXCI] : | If you responded YES to working with IMS/DB under CICS, enter the CICS EXCI load library name only if you do not want the default. |
| PLEASE CONFIRM (YES/NO/QUIT) [YES] : | Confirm the entered details. |
| DO YOU WANT ATTUNITY CONNECT TO WORK WITH CICS APP ADAPTER (YES/NO) [YES] : | Answer YES to this prompt. |
| ENTER THE CICS EXCI LOAD LIBRARY NAME [CICSTS13.CICS.SDFHEXCI] : | Enter the CICS EXCI load library name only if you do not want the default. |
| PLEASE CONFIRM (YES/NO/QUIT) [YES] : | Confirm the entered details. |
| THE VSAM DRIVER IS INSTALLED AUTOMATICALLY. DO YOU ALSO WANT ATTUNITY CONNECT TO WORK WITH VSAM UNDER CICS (YES/NO) [NO] : | Answer YES to this prompt if you want to access VSAM data under CICS. |
| ENTER THE CICS EXCI LOAD LIBRARY NAME [CICSTS13.CICS.SDFHEXCI] : | If you responded YES to working with VSAM under CICS, enter the CICS EXCI load library name only if you do not want the default. |
| PLEASE CONFIRM (YES/NO/QUIT) [YES] : | Confirm the entered details. |
| ENTER THE ISPF LOAD LIBRARY NAME [ISP.SISPLOAD] : | Enter the ISPF load library name only if you do not want the default. |
| PLEASE CONFIRM (YES/NO/QUIT) [YES] : | Confirm the entered details. |
| ENTER THE OUTPUT CLASS FOR INSTALLATION OUTPUT [A] : | Enter the output class for Attunity Connect output. Assigning a device which is set on HOLD prevents the loss of log information when Attunity Connect started tasks finish (the default is A). |

| Screen | Response |
|--|--|
| DO YOU WANT TO USE THE DEFAULT JOB CARD Y/N [Y] | A job card is displayed. If you want to use a replacement card, it must be entered as it will appear in the job. You can enter up to six lines. Enter a blank line to end input. If you do not enter a card, the Attunity Connect default card is used. |

The installation is completed. All JCL jobs and REXX procedures are written to the *INSTROOT.USERLIB* library. *INSTROOT* is the high-level qualifier for the installation.

Troubleshooting the Installation

The following notes provides reasons and solutions why the installation job fails:

- When installing the demo database, the installation attempts to delete a previous version of the demo. If there wasn't any previous version, a return code of 8 is received. This can be ignored.
- If the failure is a JCL ERROR and you didn't enter any syntax errors in the job, then it's probably because the ADABAS load library location is not ADA622.LOAD. If this is the case, do the following:
 - Server members (ATTSRVR and NVIMSSRV) should be edited and ADA622.LOAD should be changed to the correct ADABAS load library location.
 - Edit both the NAVSQL and NAVCMD members by adding the location of the ADABAS load library to the TASKLIB card. For example:

```
"ALLOCATE DDNAME(TASKLIB) DA('NAVROOT.LOAD'
      'ADA622.LOAD'
      'ISP.SISPLOAD' ) SHR "
      "EXEC 'NAVROOT.USERLIB(FCALL)'
      'TASKLIB NAVUTIL P(''')' "
```

NAVROOT is the high-level qualifier where Attunity Connect is installed.

The failure of the run in this case results in the Attunity Connect repository not being updated with necessary information. Contact Attunity Support to supply XML files and

instructions about how to update the repository with the information in these files.

- If Attunity Connect abends when attempting to access DB2 data, check the DB2 Load and Runtime libraries in TASKLIB for NAVCMD and NAVSQL and in STEPLIB for ATTSRVR.
 - ❖ You can use the DB2BIND job in NAVROOT.USERLIB to verify the correct libraries.

Chapter 3 Post Installation Instructions

The following post installation tasks must be done to work with Attunity Connect:

- General Post Installation Procedures
- Setting Up Attunity Connect to Work With CICS
- Setting Up Attunity Connect to Work With IMS/TM
- Setting Up Attunity Connect for Reentrancy
- Setting Up Attunity Connect to Access DB2 CLI
- Setting Up Attunity Connect to be Able to Update VSAM Data
- Setting Up Attunity Connect to Access IMS/DB
- Installing the Attunity Connect Natural/CICS Agent
- Setting the Language

In addition to the above tasks, if you are upgrading from version 3.0 of Attunity Connect (and not from version 3.1 and higher), refer to "Upgrading Attunity Connect" on page 33.

General Post Installation Procedures

Create a dataset called *NAVROOT.DEF.LICENSPK* with a fixed record format and record length of 80. *NAVROOT* is the high-level qualifier where Attunity Connect is installed.

- ❖ One track of a 3380/3390 disk is more than sufficient when allocating the *NAVROOT.DEF.LICENSPK* dataset.

Copy the PAK to *NAVROOT.DEF.LICENSPK*. (Copy the PAK in ASCII format.)

All JCL jobs and REXX procedures are written to the *NAVROOT.USERLIB* library. After the installation procedure completes, do the following:

- Define the *LOADAUT* library as an APF-authorized library.
 - ❖ To define a DSN as APF-authorized, in the SDSF screen enter the command:
"/setprog apf,add,dsn=navroot.loadaut,volume=*ac002*"
where *ac002* is the volume where you installed Attunity Connect and *NAVROOT* is the high-level qualifier where Attunity Connect is installed.

If the Attunity Connect installation volume is managed by SMS, when defining APF-authorization enter the following command in the SDSF screen:

```
"/setprog apf,add,dsn=navroot.loadaut,SMS"
```

Make sure that the library is APF-authorized, even after an IPL (reboot) of the machine.

- **Move the *NAVROOT.USERLIB(ATTDAEMN)* and *NAVROOT.USERLIB(ATTSRVR)* members to any active proclib (such as *user.proclib*). *ATTDAEMN* and *ATTSRVR* are run as started tasks.**

- ❖ If you decide to change the name of the *ATTSRVR* member when you move it to a general high-level qualifier, change the name specified in the *StartupScript* parameter in the daemon configuration to the new name:

Run *NAVROOT.USERLIB(NAVCMD)* and enter "EDIT DAEMON IRPCDINI" at the prompt.

Change the *startupScript* parameter from *ATTSRVR* to the new name for the server:

```
<Workspace name="Navigator"
           startupScript="NEW_NAME"
           serverMode="reusable"
           ... />
```

Exit and save the change.

If you get the following error:

```
ISPS118L SERVICE NOT INVOKED. A VALID ISPF ENVIRONMENT
DOES NOT EXIST.
```

perform the following procedure:

Run *NAVROOT.USERLIB(NAVCMD)* and enter 'export sys all xml.data.set' at the prompt.

Using the OS/390 text editor, change the *startupScript* parameter from *ATTSRVR* to the new name for the server:

```
<Workspace name="Navigator"
           startupScript="NEW_NAME"
           serverMode="reusable"
           ... />
```

Rerun *NAVROOT.USERLIB(NAVCMD)* and enter 'import sys xml.data.set' at the prompt.

- To use two-phase commit capability to access data on the OS/390 or z/OS machine, define every library in the ATTSRVR JCL as an APF-authorized library.

- ❖ To define a DSN as APF-authorized, in the SDSF screen enter the command:

```
"/setprog apf,add,dsn=navroot.library,volume=ac002"
```

where *ac002* is the volume where you installed Attunity Connect and NAVROOT is the high-level qualifier where Attunity Connect is installed.

If the Attunity Connect installation volume is managed by SMS, when defining APF-authorization enter the following command in the SDSF screen:

```
"/setprog apf,add,dsn=navroot.library,SMS"
```

Make sure that the library is APF-authorized, even after an IPL (reboot) of the machine.

- Change the following line in the ATTTAEMN script to include the IP address of the OS/390 or z/OS machine.

For example, before:

```
// PARM=' -B START IRPCDINI '
```

After:

```
// PARM=' -B -L ip_address START IRPCDINI '
```

where IRPCDINI is the default daemon configuration.

- ❖ Attunity Connect configuration data is stored in an Attunity Connect repository.
- Make the following definitions in the security manager (the following is phrased specifically for RACF, although the same principles also apply to TopSecret and ACF/II).
 - Define ATTTAEMN and ATTSRVR with a started task class and a general profile that enables the following:
 - Access to an Open OS/390 segment (that defines access to TCP/IP OA sockets).
 - Access to DB2 (for the ATTSRVR.* profile).
 - Access to read, write, allocate and delete for datasets under *NAVROOT*.
 - The Attunity Connect mainframe version includes a PS – *NAVROOT.DEF.GBLPARMS* – that contains global environment information. This PS is read at start up and the correct version of Attunity Connect is used, based on the details provided in the Attunity Connect start up task. The information stored in this member includes the dataset qualifier where Attunity Connect is installed, and other information for Attunity Connect use.
 - ❖ NAVROOT is the high-level qualifier where Attunity Connect is installed.

If you change the location of this member, you must also change the relevant cards in the following jobs to the new locations:

- ATTSRVR – located in an active proclib (such as user.proclib)
- ATTDAMN – located in an active proclib (such as user.proclib)
- NAVSQL – located in *NAVROOT.USERLIB*
- The input during the installation procedure is written to *nnn.BUILDKIT.SRC(PARS)*. You can use this dataset to provide the same inputs if you rerun the installation.
 - ❖ *nnn* is the high-level qualifier you assign for the Attunity Connect installation.
- For information about specifying Attunity Connect as the service using port 2551 in the TCP/IP network services file, consult TCP/IP documentation.

Setting Up Attunity Connect to Work With CICS

If you did not set up CICS during the installation, do the following to work with CICS:

- Edit the ATTSRVR member to include the CICS EXCI load library name. ATTSRVR is located in both *NAVROOT.USERLIB* and an active proclib (such as user.proclib). For example, edit ATTSRVR to add the following lines:

```
// DD DSN=&cicspfx.SDFHEXCI,  
// DISP=SHR
```

&cicspfx is the CICS system prefix (CICSTS13.CICS for example)
NAVROOT is the high-level qualifier where Attunity Connect is installed.

- Edit the *NAVROOT.USERLIB(NAVCMD)* and *NAVROOT.USERLIB(NAVSQL)* to include the CICS EXCI load library name to the TASKLIB. For example, add the following lines:

```
ALLOCATE DDNAME(TASKLIB) DA('NAVROOT.LOAD'  
'&cicspfx.SDFHEXCI' 'ADA622.LOAD'  
'ISP.SISPLOAD') SHR
```

&cicspfx is the CICS system prefix (CICSTS13.CICS for example)
NAVROOT is the high-level qualifier where Attunity Connect is installed.

- IRCSTRT=YES must be specified in the CICS initialization parameters, so that the IRC (Inter Region Communication) starts, as specified in "Requirements" on page 5.

- Attunity provides a VTAM netname, ATYCLIEN, for the specific connection used by EXCI (and MRO) to relay program calls to the CICS target system. Set up ATYCLIEN as follows:
 - Use the JCL in the NAVROOT.USERLIB(CICSCONF) member to submit the DFHCSDUP batch utility program to add the resource definitions to the DFHCSD dataset (see the IBM CICS Resource Definition Guide for further details)

Or,

- Use the instream SYSIN control statements in the NAVROOT.USERLIB(CICSCONF) member as a guide to defining the resources online using the CEDA facility.

After the definitions have been added (via batch or using the CEDA facility), logon to CICS and issue the following command to install the resource definitions under CICS:

```
CEDA INST GROUP(ATYI)
```

Setting Up Attunity Connect to Work With IMS/TM

In order to execute an IMS transaction with Attunity Connect, you need to set OTMA as described below.

► To set OTMA to work with Attunity Connect:

1. Install OTMA with OTMA C/I where IMS resides, since OTMA is not automatically installed using the IMS INSTALL/IVP Dialog.
2. During IMS system definition, set the startup parameter in the IMS procedure to OTMA=YES.

In addition, set additional OTMA-related parameters such as GRNAME= for the XCF group name and OTMANM= for the IMS member name in that XCF group, as in the following example:

```
EDIT          IMS.PROCLIB(DFSPBIV1) - 01.03
command ==>
000082 AOIS =,
000083 GRNAME=IMSATT01,
000084 OTMA=YES,
000085 MAXPST=
000086 OTMANM=
```

3. Start the OTMA Callable Interface (C/I).

Add an entry in the program properties table (PPT) for the OTMA C/I initialization program as follows:

- a) Edit the SCHEDxx member of the SYS1.PARMLIB data set by adding the following entry:

```
PPT PGMNAME(DFSYSVIO)/*PROGRAM NAME =DFSYSVIO */
CANCEL      /*PROGRAM CAN BE CANCELED */
KEY(7)      /*PROTECT KEY ASSIGNED IS 7 */
SWAP        /*PROGRAM IS SWAPPABLE */
NOPRIV      /*PROGRAM IS NOT PRIVILEGED */
DSI         /*REQUIRES DATA SET INTEGRITY */
PASS        /*CANNOT BYPASS PASSWORD PROTECTION */
SYST        /*PROGRAM IS A SYSTEM TASK */
AFF(NONE)   /*NO CPU AFFINITY */
NOPREF      /*NO PREFERRED STORAGE FRAMES */
```

- b) Do one of the following to make the SCHEDxx changes take effect:

- Re-IPL the system.
- Issue the MVS SET SCH= command.

- c) Edit and submit the following JCL procedure to run DFSYSVIO:

```
//OTMAINIT PROC RGN=3000K,SOUT=A,
//PARM1=
//*
//IEFPROC EXEC PGM=DFSYSVIO,
//REGION=&RGN
//*
//STEPLIB DD DISP=SHR,UNIT=SYSDA,
//DSN=IMSVS.RESLIB
//*
//SYSPRINT DD SYSOUT=&SOUT
//SYSUDUMP DD SYSOUT=&SOUT
//*
```

Run DFSYSVIO after the IPL, to initialize OTMA C/I.

Setting Up Attunity Connect for Reentrancy

In order to set up Attunity Connect to be reentrant, move NAVROOT.LOAD to the Link Pack Area (LPA).

NAVROOT.LOAD includes the daemon and NAVUTIL utility.

Using the LPA reduces real storage usage (because everyone shares the LPA copy) and fetch time.

LPA and Impersonation

To use the LPA and impersonation (as described in *Attunity Connect Reference*), so that you can run in a security context that is different than the context of the process that owns the server, do the following:

- Place the *NAVROOT.LOAD(ATYSVCW)* member in an APF-authorized library outside the LPA.
- Change the *ATTSRVR* member (located in the active proclib), by adding the following to the *STEPLIB* list:

```
// DD DSN=apf_library,DISP=SHR
```

Where *apf_library* is the APF-authorized library outside the LPA where the *ATYSCVW* member was moved.

Setting Up Attunity Connect to Access DB2 CLI

In order to access DB2 CLI, you must have DB2 CLI installed on the machine. For details of DB2 CLI, refer to the IBM *Call Level Interface Guide and Reference*.

The Attunity Connect DB2 CLI driver uses an ODBCINI file. During installation of Attunity Connect, an ODBCINI file is defined as a member in *NAVROOT.USERLIB*.

The ODBCINI file is similar to the following:

```
; This is a comment line...
; Example COMMON odbcini
COMMON
MVSDEFAULTSSID=DSN1
; Example SUBSYSTEM odbcini for DSN1 subsystem
DSN1
MVSATTACHTYPE=CAF
PLANNAME=DSNACLI
```

The *PLANNAME* value is the default DB2 Calling Level Interface (CLI) plan name. If a different plan is used, change the name to the correct plan.

- ❖ In the example, CAF is used, so only one-phase commit transactions are supported. Attunity Connect also supports two-phase commit transactions, by setting the *MVSATTACHTYPE* parameter to *RRSAF*.

You can specify other parameters in the ODBCINI file, as described in the IBM *ODBC Guide and Reference*.

- ❖ The *AUTOCOMMIT* initialization parameter is set automatically by Attunity Connect at runtime, and thus should not be set in the ODBCINI file.

You must bind to the plan specified in the PLANNAME parameter. The bind to the plan, check that the job DSN_{xxx}.SDSNSAMP(DSNTIJCL) includes the following line:

```
BIND PLAN(DSNACLI)
```

where DSN_{xxx} is the DB2 high-level qualifier (the default is DSN610) and DSNACLI is the plan name specified for the PLANNAME parameter.

Setting Up Attunity Connect to be Able to Update VSAM Data

In order to set up Attunity Connect to be able to update VSAM data from a CICS transaction, copy the UPDTRNS load module from *NAVROOT.LOAD* to a CICS DFHRPL library (such as 'CICS.USER.LOAD') and then define the UPDTRNS program under CICS using any available group such as ATY group:

```
CEDA DEF PROG(UPDTRNS) G(ATY) LANG(C) DA(ANY) DE(ATTUNIT VSAM UPDATE PROG)
```

After defining the UPDTRNS program to a group, install it as follows:

```
CEDA IN G(ATY)
```

Setting Up Attunity Connect to Access IMS/DB

In the NVIMSSRV, NVIMSSQL, NVIMSCMD scripts that call IMS, add DD cards for every dataset referenced by one of the DBDs for the PSB.

- ❖ You cannot run multiple versions of NVIMSCMD in the same session using split screen.

Example DD Card

The following DD card can be specified when one of the DBD cards uses the DD card NAVDD. Note the other cards, which are built based on the entries specified for IMS during installation.

```
"ALLOCATE DDNAME(IMS) DA('ATTUNITY.CONNECT.PSBLIB'  
'ATTUNITY.CONNECT.DBDLIB') SHR" – location of IMS libraries  
"ALLOCATE DDNAME(DFSVSAMP) DA('IMS.PROCLIB(DFSVSMDB)') SHR" – VSAM index file  
"ALLOCATE DDNAME(PROCLIB) DA('IMS.PROCLIB') SHR"  
"ALLOCATE DDNAME(NAVDD) DA('ATTUNITY.IMS.DATA.MYDS') SHR" – DD card for data of the DBD  
"ALLOCATE DDNAME(IEFRDER) DA('ATTUNITY.CONNECT.TMP.IMSLOG') NEW  
DELETE SPACE(1,1) CYL  
BLKSIZE(1920) LRECL(1916) RECFM(U) REUSE" – IMS log
```


"CALL 'IMS.RESLIB(DFSRR00)' 'DLI,NAVUTIL,NAVPSB'" – **PSB name for this call**

- ❖ This DD card is appropriate for cases when using HIDAM.

For details about setting up the daemon to work with IMS/DB, refer to *Attunity Connect Reference*.

In the security manager, define NVIMSSRV with a started task class and a general profile that enables the following:

- Access to an Open OS/390 segment (that defines access to TCP/IP OA sockets).
- Access to read, write, allocate and delete for datasets under *NAVROOT*.
- ❖ The above is phrased specifically for RACF, although the same principles also apply to TopSecret and ACF/II.

Setting Up IMS/DB Under CICS

In order to access IMS/DB data under CICS, do the following:

1. Copy the `ATYDBCTL` member from *NAVROOT.LOAD* to a CICS DFHRPL library (such as 'CICS.USER.LOAD') and then define the `ATYDBCTL` program under CICS using any available group such as `ATY` group:

```
CEDA DEF PROG(ATYDBCTL) G(ATY) LANG(C) DA(ANY) DE(ATY IMSDB CICS PROGRAM)
```

After defining the `ATYDBCTL` program to a group, install it as follows:

```
CEDA IN G(ATY)
```

2. Under CICS, run the CDBC transaction and choose the first option (Connection). Provide the startup table suffix and DBCTL ID override value.

Setting Up IMS/DB Under IMS/TM

In order to access IMS/DB data under IMS/TM, do the following:

1. Copy the `ATYDBDC` program from *NAVROOT.LOAD* to an IMS/TM program library (such as 'IMS.PGMLIB') with the name of the PSB used to access the IMS/DB data.
2. Define a transaction to point to the program, using statements similar to the following:

```
APPLCTN PSB=ATYDBDC, SCHDTYP=PARALLEL
TRANSACT CODE=ATYIMSTM, PRTY=(7,10,2), INQUIRY=NO, MODE=SNGL, EDIT=ULC
```

- ❖ The default transaction name is `ATYIMSTM`. If you use a different transaction, the transaction name must be less than or equal to eight

characters and you must specify this value in the `imsTransname` driver property in the binding.

3. Set up OTMA, as described above ("Setting Up Attunity Connect to Work With IMS/TM" on page 21).

Installing the Attunity Connect Natural/CICS Agent

The installation copies the following libraries (source and load) and the Natural INPL dataset to disk.

- A source library (NAVROOT.NATAGENT.SRCLIB)
- A load library (NAVROOT.NATAGENT.LODLIB)
- An INPL dataset containing Natural source programs and data areas (NAVROOT.NATAGENT.INPL)

The following steps summarize the installation procedure for the Attunity Connect Agent for Natural/CICS Remote Procedure Calls:

1. Configure the Agent – specify the parameters of the Attunity Agent Control Block and perform an assembly/link.
2. Define and install the required CICS resource definitions.
3. Load the Natural programs from the INPL dataset and catalog them.
4. Make the Attunity Agent load modules available to the CICS region.
5. Verify that the installation is successful on the mainframe
6. Verify that the installation is successful from a client machine.

Configure the Agent

Specify the parameters of the Attunity Connect Agent Control Block and perform an assembly/link.

Refer to "System Parameters for the Attunity Connect Natural Agent" on page 35 for a description of all the parameters available for tailoring the Attunity Connect Agent to the specific installation requirements.

- ❖ Specifically, determine which security strategy is best for the site and how you will implement it. Refer to "SECMODE" and "AUTO" parameters on page 38.

Edit the member JOBCBLK in the source library (NAVROOT.NATAGENT.SRCLIB), as follows:

1. Specify the parameter values you have chosen.
2. Edit dataset names in the assemble/link JCL as appropriate.
3. Submit the job.
4. Check the output to verify that a load module with the name ATYLCBLK has been successfully link-edited into the load library.

Install the CICS Resource Definitions

If any program names, transids, etc. were modified in the previous step, edit the member CICSDEF in the source library (NAVROOT.NATAGENT.SRCLIB) and make the appropriate changes to the CICS resource definitions. It is also recommended that you change the default RECEIVECOUNT of the ATYS sessions definition (for EXCI communication) in this member. The default value set for RECEIVECOUNT IS 20.

The member CICSDEF can be used as input to the DFHCSDUP batch utility program to add the resource definitions to the DFHCSD dataset. A source library member named JOBCICS with sample JCL has been supplied for convenience. See the *IBM CICS Resource Definition Guide* for further details.

For example, edit the JOBCICS member as follows:

```
//CICSDEF PROC CSDDSN='CICS.DFSCSD',
                SRCLIB='NAVROOT.NATAGENT.SRCLIB',
                CICSPRF='CICS.CICS'
```

After editing the file, save and submit it.

Alternatively the CICSDEF member can be used as a guide to defining the resources online using the CEDA facility.

After the definitions have been successfully added (either via DFHCSDUP or by manual online definition), logon to CICS and issue the following command to install the resource definitions under CICS:

```
CEDA INST GROUP(ATYL)
CEMT SET IRC CLOSE
CEDA INST GROUP(ATYI)
CEMT SET IRC OPEN
```

Load and Catalog the Natural Programs

Either use the JCL contained in member JOBNLOAD in the NAVROOT.NATAGENT.SRCLIB library, or refer to the in-house Natural administrator, who should have standard JCL available to load Natural programs from an INPL file to the Natural user system file using the NATLOAD utility.

- ❖ Use the NATLOAD utility and not the INPL utility. For versions 2.3 of Natural and upwards, the INPL utility will fail.

Specify the supplied Attunity Connect INPL dataset in the JCL (CMWKF01 ddname) and submit the job.

The Natural programs and data areas are loaded to the ATTUNITY library on the user system file.

- ❖ If Natural Security is installed, then the ATTUNITY library should be defined to Natural Security.

Start a Natural online session and do the following to catalog all of the Attunity Connect programs and data areas:

1. Logon to library ATTUNITY.
 2. Issue the CATALOG command and enter * as the program name.
 3. Mark the option "Catalog ALL Source-programs" and press Enter.
 4. Add the ATTUNITY library to the steplib of all libraries containing subprograms executed by the Attunity Connect Natural Agent. Or, alternatively, move the cataloged modules to library SYSTEM.
- ❖ The source subprogram TESTAG01 is used to verify a successful installation. This subprogram should have been cataloged after performing the previous steps.

Make the Attunity Connect Agent Load Modules Available

Make the Attunity Connect Natural Agent load modules available to the CICS region in one of following ways:

- Concatenate the Attunity Connect Agent load library to the DFHRPL ddname in the CICS region JCL.
- Copy the required Attunity Connect load modules to a user load library already defined in DFHRPL.

If the CICS region is currently active, the NEWCOPY function of CEMT must be executed to make the Attunity Connect load modules accessible for this session of CICS.

As a general rule of thumb, peruse the list of resources being defined to CICS in the CICSDEF member in the Natural Agent source library (programs, transactions, connections, etc.) and decide what to authorize in order for the Natural Agent to work. In particular note that the ATYN, ATYP, and ATYM transactions are all being started as asynchronous non-terminal tasks and should be defined to the security tool (such as RACF) accordingly. Also the ATYCLIEN special connection for EXCI should be defined to the security tool.

Verify the Agent Installation is Successful

Test remote procedure calls are included in the kit to verify a successful installation. The two remote procedure calls perform simple arithmetic manipulations on the input parameters and return the results as output parameters.

Do the following on the mainframe to confirm that the software is functioning as specified.

- ❖ These tests verify only that the ATYI transaction and Attunity Connect Natural Agent function correctly. They do not check that Attunity Connect can be used with Natural, which is checked in the next step.

1. Edit member TESTINST in the provided source library and make any necessary changes. In particular, change the &APPLID variable to the value of APPLID in the CICS region.
 - ❖ The other variables enable you to modify the arithmetic operands and find-criteria of the subprograms being called. Do not change these variables when initially verifying the installation.
2. Save the member.
3. Edit member JOBTAGNT in the provided source library and make any necessary changes for the site. In particular, set the variable TESTNUM to '01'.
4. Submit the job.

The joblog of the batch job should show the following results:

```
+RESP          = 00000000
+RESP2         = 00000000
+ABCODE        =
+OPERAND1      = 0128
+OPERAND2      = 0016
+SUM           = 00144
+DIFFERENCE    = 0112
+PRODUCT       = 00002048
+QUOTIENT      = 0008
+ERRCODE       = 00000000
+MESSAGE       = TESTAG01 EXECUTED SUCCESSFULLY
```

Verify the Installation is Successful from a Client

Test remote procedure calls are included in the kit to verify a successful installation. These remote procedure calls perform simple arithmetic manipulations on the input parameters and return the results as output parameters.

1. Specify an entry in the binding configuration similar to the following:

```
<datasources>
  <datasource name='NATPROC' type='NATURAL'
              connect='CICS,ATYCLIEN' />
</datasources>
```

2. Set up the metadata for the TESTAG01 procedure. The XML definition for the metadata is as follows:

```
<?xml version='1.0'?>
<navobj>
  <procedure name="testag01">
    <dbCommand>
      PROGRAM=ATYLSTN;TRANSID=ATYI;LIBRARY=ATTUNITY
      SUBPROGRAM=TESTAG01
    </dbCommand>
```

```
<fields>
  <field name="SUM" datatype="ada_numstr_s" size="5" scale="0"/>
  <field name="DIFFERENCE" datatype="ada_numstr_s" size="4"
    scale="0"/>
  <field name="PRODUCT" datatype="ada_numstr_s" size="8" scale="0"/>
  <field name="QUOTIENT" datatype="ada_numstr_s" size="4"
    scale="0"/>
</fields>
<parameters>
  <field name="OPERAND1" datatype="ada_numstr_s" size="4" scale="0"/>
  <field name="OPERAND2" datatype="ada_numstr_s" size="4" scale="0"/>
</parameters>
</procedure>
</navobj>
```

3. Import the ADD metadata XML file to Attunity Connect by running the NAVCMD IMPORT utility. For example:

Run `NAVROOT.USERLIB (NAVCMD)` and enter 'IMPORT NATPROC ATTUNITY.SAMPLE.ADD.TSTAG01X' at the prompt.

where ATTUNITY.SAMPLE.ADD.TSTAG01X is the dataset which contains the XML.

4. Execute calls from a client to confirm that the software is functioning as specified. For example, on a non-OS/390 (or z/OS) machine, running Attunity Connect, use NAV_UTIL EXECUTE NATPROC.

TESTAG01 – Receives two arithmetic operands and returns their sum, difference, product, and quotient.

Input parameters – OPERAND1 (numeric, 4 bytes, 0 precision), OPERAND2 (numeric, 4 bytes, 0 precision)

Output parameters – SUM (numeric, 5 bytes, 0 precision), DIFFERENCE (numeric, 4 bytes, 0 precision), PRODUCT (numeric, 8 bytes, 0 precision), QUOTIENT (numeric, 4 bytes, 0 precision)

Example

Set the input parameters as follows:

OPERAND1 = 128

OPERAND2 = 16

The following output parameters should be returned:

SUM= 144

DIFFERENCE= 112

PRODUCT= 2048

QUOTIENT= 8

Setting the Language

National Language Support (NLS) is provided by Attunity Connect for the following languages:

- English (the default)
- Hebrew
- Japanese
- Korean
- Simple Chinese
- Traditional Chinese

The language is specified via the following Attunity Connect environment settings:

- language
- codepage

For full details of NLS, refer to "National Language Support (NLS)" in *Attunity Connect Reference*.

► To define the language and codepage environment settings:

1. Run the following command:

```
NAVROOT.USERLIB (NAVCMD)
```

2. At the prompt, enter the following:

```
edit bindings
```

The XML representation of the Attunity Connect binding information is displayed, including some XML similar to the following:

```
<environment name='NAV'>
  <misc codePage=' ' language=' ' />
  <queryProcessor/>
  <optimizer goal='none' preferredSite='server' />
  <transactions/>
  <odbc/>
  <oledb/>
  <tuning/>
</environment>
```

3. In the language field (bolded in the above XML), specify one of the following for the language required, or leave blank for English):

HEB – Hebrew

JPN – Japanese

KOR – Korean

SCHI – Simple Chinese

TCHI – Traditional Chinese

4. Optionally, in the codePage field (bolded in the above XML), specify the codepage required.

You can skip this step, and just specify a language (see the previous step). In this case, a default codepage is used. The following shows the default codepages:

HEB – IW8EBCDIC424

JPN – JA1616DBCS

KOR – KO16DBCS

SCHI – ZHS16DBCS

TCHI – ZHT16DBCS

The following table lists the supported codepages according to language:

| Language | Supported Codepage Values | Description |
|----------|---------------------------|---|
| European | D8EBCDIC273 | EBCDIC codepage 273 8-bit Austrian German |
| | DK8EBCDIC277 | EBCDIC codepage 277 8-bit Danish |
| | S8EBCDIC278 | EBCDIC codepage 278 8-bit Swedish |
| | I8EBCDIC280 | EBCDIC codepage 280 8-bit Italian |
| | WE8EBCDIC284 | EBCDIC codepage 284 8-bit Latin American/Spanish |
| | WE8EBCDIC285 | EBCDIC codepage 285 West European |
| | F8EBCDIC297 | EBCDIC codepage 297 8-bit French |
| | WE8EBCDIC500 | EBCDIC codepage 500 West European |
| Hebrew | IW8EBCDIC424 | EBCDIC codepage 424 8-bit Latin/Hebrew (new EBCDIC) |
| | IW8EBCDIC806 | EBCDIC codepage 806 8-bit Latin/Hebrew (old EBCDIC) |

| Language | Supported Codepage Values | Description |
|---------------------|---------------------------|---|
| Japanese | JA16DBCS | IBM EBCDIC 16-bit with Latin characters |
| | JA16EBCDIC930 | IBM DBCS codepage 390 16-bit ^a |
| Korean | KO16DBCS | IBM EBCDIC 16-bit |
| Simple Chinese | ZHS16DBCS | IBM EBCDIC 16-bit Simple Chinese |
| Traditional Chinese | ZHT16DBCS | IBM EBCDIC 16-bit Traditional Chinese |

a. This codepage has no encoding for lowercase Latin letters. All resources should be defined in uppercase.

❖ If you get the following error:

```
ISPS118L SERVICE NOT INVOKED. A VALID ISPF ENVIRONMENT DOES NOT EXIST.
```

Run `NAVROOT.USERLIB(NAVCMDB)` and enter 'export sys all xml.data.set' at the prompt.

Using the OS/390 text editor, change the language and, optionally the codepage values as described above.

Rerun `NAVROOT.USERLIB(NAVCMDB)` and enter 'import sys xml.data.set' at the prompt.

Upgrading Attunity Connect

Import all the XML files exported prior to doing the installation, as described in "Upgrade Installation" on page 7. Run:

```
NAVROOT.USERLIB(NAVCMDB)
```

Enter `IMPORT xml_file_name` at the prompt.

where `xml_file_name` is the name (including path) of the dataset where the exported information was written.

Appendix A System Parameters for the Attunity Connect Natural Agent

The system programmer can configure system parameters, including non-activity limits, maximum number of threads (that is, server tasks), so as to tailor the system to the installation's specific requirements.

- ❖ Transids, enqueue names, program names, TSQ prefixes, TDQ names, etc. should be left unchanged unless this creates a conflict with already existing names and id's in the system.

The following system parameters can be tailored:

| | |
|---------------|---|
| TENQ | Enqueue name for Attunity Connect Natural/CICS thread table. Default value: ATYLTHTB |
| PTASK | Transid responsible for purging a runaway server task. Default value: ATYP If changed, the corresponding CICS PCT entry must be modified accordingly. |
| NTASK | Transid activating the Natural server frontend, which in turn activates the Natural server nucleus. Default value: ATYN If changed, the corresponding CICS PCT entry must be modified accordingly. |
| MTASK | Transid activating the Attunity Connect message handler program. Default value: ATYM If changed, the corresponding CICS PCT entry must be modified accordingly. |
| NFRONT | Name of server frontend program. Default value: ATYFRONT If changed, the actual program must also be renamed and the corresponding PCT and PPT entries modified accordingly. |
| NBACK | Name of server backend program. Default value: ATYBACK If changed, the actual program must also be renamed and the corresponding PPT entry modified accordingly. |

| | |
|---------------|--|
| NATNUC | Name of Natural/CICS nucleus, to which the server frontend does an XCTL. This should be the name of the standard Natural/CICS nucleus installed in the system. Default value: NC314RE |
| PDELAY | <p>The delay in seconds allowed for the Natural server to perform the remote procedure call. Default value: 60</p> <p>If the time set is exceeded, it is assumed that the Natural server is in a runaway loop and it is purged from the system.</p> <p>❖ In most environments PDELAY and LDELAY (see below) should be identical.</p> |
| LDELAY | <p>The delay in seconds allowed for the Agent to wait for the Natural server to perform the remote procedure call. Default value: 60</p> <p>If the time set is exceeded, the Agent returns a non-zero response code to the client indicating that the server has not responded.</p> <p>❖ In most environments PDELAY (see above) and LDELAY should be identical.</p> |
| PXINTQ | <p>The prefix used to build, together with the thread number, the name of a temporary storage queue used to pass the input parameters to the procedure call. Default value: ATYIN</p> <p>Example – Assuming the default, the TSQ's will be named ATYIN001, ATYIN002, etc.</p> |
| PXOUTQ | <p>The prefix used to build, together with the thread number, the name of a temporary storage queue used to pass the output parameters from the procedure call back to the Agent. Default value: ATYOU</p> <p>Example – Assuming the default, the TSQ's will be named ATYOU001, ATYOU002, etc.</p> |
| PXCLTQ | <p>The prefix used to build, together with the thread number, the name of a temporary storage queue used to pass control data from the Agent to the subprogram and back. Default value: ATYCL</p> <p>Example – Assuming the default, the TSQ's for the respective threads will be named ATYCL001, ATYCL002, etc.</p> |
| PXPTRQ | <p>The prefix used to build, together with the thread number, the name of a request id (REQID) used to identify the wait of the task responsible for purging the Natural server should it enter a runaway loop. Default value: ATYPT</p> <p>Example – Assuming the default, the REQID's will be named ATYPT001, ATYPT002, etc.</p> |

| | |
|---------------|---|
| PXLWRQ | <p>The prefix used to build, together with the thread number, the name of a request id (REQID) used to identify the wait into which the Agent enters while awaiting a reply from the Natural server. Default value: ATYLW</p> <p>Example – Assuming the default, the REQID's will be named ATYLW001, ATYLW002, etc.</p> |
| PXNWRQ | <p>The prefix used to build, together with the thread number, the name of a request id (REQID) used to identify the wait into which the Natural server task enters after it has concluded a procedure call and waits for its thread to be chosen for a subsequent procedure call. Default value: ATYNW</p> <p>Example – Assuming the default, the REQID's will be named ATYNW001, ATYNW002, etc.</p> |
| MAXTH | <p>The maximum number of threads (and therefore the maximum number of Natural server tasks available for work) that can be activated per CICS address space.</p> <p>This value should not exceed the number of sessions available for specific (non-generic) EXCI connections to the CICS address space. Default value: 10</p> |
| MSG | <p>The destination for error messages written by the Attunity Connect Natural/CICS Agent or its component modules. Permissible values are:</p> <p>JOBLOG – Error messages are written as operator messages to the CICS joblog.</p> <p>TDQ (the default value) – Messages are written to the transient data queue specified by the TDQID parameter.</p> <p>BOTH – Messages are written to both JOBLOG and TDQ destinations.</p> |
| TDQID | <p>The name of the transient data queue to which error messages are written if the MSG parameter (see above) is specified as TDQ or BOTH. Default value: ATYL</p> |
| MAXNTM | <p>Maximum number of “no thread available” error messages that will be written within the period of an hour. Default value: 20</p> |
| MAXMSG | <p>Maximum number of all error messages that will be written within the period of an hour. Default value: 300</p> |
| MXINAC | <p>Maximum inactivity in minutes permitted to a Natural server task before it terminates and is purged from the system. Default value: 15</p> |

SECMODE

Flag specifying which security strategy the user has opted to implement for the Natural server task:

0 (No server-side security) – Natural Security is not installed. A library parameter, if passed, will cause a logon to that library if it is not yet the current library-id for the server task. All userid and password passed parameters are optional and have no effect on the Agent per se; the subprogram may interrogate them as well as additional user information for the purpose of enforcing "homemade" security as it sees fit.

1 (Minimal server-side security ("trusted mode")) – This is the default value. Natural Security is installed. The Natural server task will be initialized with a "trusted" userid and password (specified in the configuration parameters) with which it will work throughout the life of the server task. All libraries from which subprograms are to be invoked must be authorized for use with this trusted user. A library parameter, if passed, will cause a logon to that library if it is not yet the current library-id for the server task. All userid and password passed parameters are optional and have no effect on the Agent per se; the subprogram may interrogate them as well as additional user information for the purpose of enforcing "homemade" security as it sees fit.

2 (Maximum server-side security) – Natural Security is installed. The Natural server task will be initialized with a userid of limited authorization. Each procedure call must supply its own library/userid/password combination as part of the call. This will enable a high level of server-side security but will incur considerable overhead during the repeated authorization work being performed by Natural Security. The Natural agent will try to minimize this overhead as much as possible by attempting to dedicate a separate thread for each library/userid/password combination, up to the maximum thread limit defined in the configuration parameters. In addition, if no new threads are available, then the Agent will attempt to locate an available thread (server) currently logged onto the same userid, requiring only a change to the current library. If no such threads are available, only then will the Agent choose the oldest inactive thread and cause its associated server to incur the full overhead of a library/userid/password re-logon. Nonetheless, one should expect additional processing overhead using SECMODE=2.

- ❖ If AUTO=ON is specified, then SECMODE=2 will be flagged as a configuration parameter error, since AUTO=ON does not provide a means to alter the userid in the middle of the Natural session.

| | |
|----------------|--|
| AUTO | <p>The value to which the Natural Security dynamic parameter AUTO should be set.</p> <p>ON (the default value) – Userid and password are not entered during Natural logon; the userid is taken from the CICS External Security Interface.</p> <p>OFF – Userid and password are entered during Natural logon.</p> <ul style="list-style-type: none">❖ Changes have to be made to the Natural assembler exit NCIUIDEX in order that an asynchronous (non-terminal) Natural task will obtain the userid externally. To avoid this problem, even users that normally implement Natural Security with AUTO=ON should consider using AUTO=OFF for the asynchronous Natural server tasks. <p>This parameter is specified only when SECMODE=2 (see above).</p> |
| SENDER | <p>The value to which the Natural dynamic parameter SENDER should be set for asynchronous Natural tasks. This should be the name of a transient data queue. Default value: CSSL</p> |
| OUTDEST | <p>The value to which the Natural dynamic parameter OUTDEST should be set for asynchronous Natural tasks. This should be the name of a transient data queue. Default value: CSSL</p> |
| TBTCH | <p>Specifies whether the Natural server task issues the command SET CONTROL 'T=BTCH' during its initialization, in order to operate inline support mode for messages, etc. output to the SENDER and OUTDEST destinations.</p> <p>YES – When the Natural server task initializes, the command SET CONTROL 'T=BTCH' is issued. This enables error messages and messages issued by the WRITE and DISPLAY commands in called subprograms to be output successfully to the SENDER or OUTDEST destinations.</p> <ul style="list-style-type: none">❖ The NATBTCH module must be installed in the Natural CICS nucleus when the nucleus is link-edited. If the NATBTCH module is not present and TBTCH=YES, an error will occur during server task initialization. <p>NO (the default value) – The command SET CONTROL 'T=BTCH' is not be issued during Natural server task initialization. TBTCH should be allowed to default to NO if the NATBTCH module is not present in the link-edit of the Natural CICS nucleus. Natural error messages and WRITE or DISPLAY messages output by subprograms are not written to the SENDER or OUTDEST destinations (that is, the messages will be "lost" but the server task will continue to operate normally).</p> |
| LOGON | <p>The startup library to which Natural should logon when the server task is initiated. This library will be specified in the LOGON command</p> |

specified in the dynamic STACK parameter when Natural is started.
Default value: ATYLSTN

USERID The userid with which Natural should logon when the server task is initiated. This userid is specified in the LOGON command specified in the dynamic STACK parameter when Natural is started. Default value: ATTY

This parameter is specified only when SECMODE=2 and AUTO=OFF (see above).

PASSWD The password with which Natural should logon when the server task is initiated. This password is specified in the LOGON command specified in the dynamic STACK parameter when Natural is started. Default value: ATTY

This parameter is specified only when SECMODE=2 and AUTO=OFF (see above).

MONITR Name of Natural dispatcher program. This program receives control when the Natural server task is initiated and is responsible for dispatching each subsequent procedure call in its thread, error-handling, interaction with the Agent, etc. Default value: ATYNDISP

If changed from default value, the actual program must be renamed as well.

ADDPARM A string of additional dynamic parameters for the Natural server task, which may be optionally added to the dynamic parameters mentioned above. Default value: (null string)

Example – ADDPARM= (MADIO=0, LT=99999, TD=2)

TSRECL The maximum length of a record that may be written to main temporary storage. Default value: 32748

DYNPARM A string of dynamic parameters for the Natural server task, which will **replace** the dynamic parameters mentioned above. Default value: (null string).

- ❖ Use this parameter with great care. You must make sure that the correct library is logged onto upon initialization of the Natural server session and the correct Natural Agent dispatcher program is activated. Normally this parameter is used to specify a profile defined by SYSPARM or NTSYS, where the actual list of dynamic parameters are defined.

Example – DYNPARM= (SYS=NATAGENT)



Checklists

Pre-Installation Information

| Topic | Required Information | Default | Comment |
|---------|-----------------------------------|-----------------|--|
| General | Operating system | | OS/390 V2R5 and up (including z/OS) |
| | Disk space | | 150 cylinders |
| | Memory | | Minimum 1MB per user |
| | Installation high-level qualifier | AC4100 | |
| | Volume | | |
| | Unit | 3390 | SMS only: unit where SMS resides. |
| | Output class | A | |
| | JCL job card | | An optional card (up to 6 lines) to replace the prefix job (entered as it will appear in the job). |
| | ISPF load library name | ISP.SISPLOAD | |
| DB2 | DB2 high-level qualifier | DSN610 | |
| | DSN name | DSNACLI | DB2CLI plan must be installed. |
| Adabas | SVC Number | 249 | |
| | Database Number | | |
| | Load library location | ADA622.LOAD | |
| IMS/DB | DBD library | Attunity.DBDLIB | |
| | PSB library | Attunity.PSBLIB | |
| | PSB name | NAVPSB | |



| Topic | Required Information | Default | Comment |
|-------|-----------------------------|--------------------|---------|
| CICS | CICS EXCI load library name | CICS.CICS.SDFHEXCL | |



Required Permissions

| |
|--|
| Permission to define an APF-authorized library |
| Permission to write to an active proclib (such as user.proclib) |
| Permission to read the CICS EXCI library |
| Permission to update the security manager (such as RACF) |
| Optionally, permission to specify an output class for Attunity Connect output. |

Installation Checklist

| Step | Comment/Outputs | X |
|---|---|---|
| tso profile prefix | Ensures that the user name is not used as part of the dataset name allocated in the next steps. | |
| Allocate dataset: {HLQ}.TRANSMIT.KIT | 130 tracks (3390), format=FB, record length=80, block size=3120 | |
| Allocate dataset: {HLQ}.TRANSMIT.LOAD | 400 tracks (3390), format=FB, record length=80, block size=3120 | |
| FTP files to OS/390 (or z/OS) | FTP using binary mode | |
| RECEIVE INDSNAME('{HLQ}.TRANSMIT.KIT') | | |
| da('{HLQ}.TRANSMIT.LIB') UNIT(unit) VOLUME(volume) | | |
| EX {HLQ}.TRANSMIT.LIB(PREPARE) | Successful MAXCC is 0, 4 or 8 BUILDKIT.SRC and BUILDKIT.LOAD created. | |
| EX {HLQ}.BUILDKIT.SRC(NAVINST) | Successful MAXCC is 0 or 4 | |

- ❖ For sites using SMS, refer to "Installation Instructions for Sites Using SMS" on page 13.



Post-Installation

| Task | Comment | X |
|--|---------------------------|---|
| Define LOADAUT library as an APF-authorized library | | |
| Copy ATTTDAEMN and ATTSRVR to the library where started task can be run from | For example, USER.PROCLIB | |
| Run the DAEMON | S ATTTDAEMN | |